

# **Universal Intelligent Controller**

## **UIC-CX9330A(B) Series Screw Air Compressor Controller**

2009-July rev. 1

Firmware R090707



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## **DOTTECH, INC**



**※ Read this direction for safety first..**

**■ Direction for safety**

**This direction is for using the product correctly so that you could be safe from danger or incident.  
Please carefully keep this all direction.**

- Please use with being attached to a dual safety device in case of using for controlling instruments which could be effective to human life or property (eg: controlling atomic energy, medical instruments, cars, trains, flights, burners, amusement instruments or safety machinery).
- Please use with panel, there is a possibility getting an electric shock.
- Do not inspect or test with connecting power.
- Please connect after checking the terminal number when connecting power.
- Do not reorganize except mechanic from 『Dotech』.
- Do not use outdoor. It would be a cause making the product life shorter.
- When connecting wires, please give a good screw on terminal. There is a possibility causing a fire with bad connection.
- Please use in the proper performance zone. If you don't, there is a possibility making the product life shorter or, causing a fire accident.
- Do not use a load which is exceeded proper value of opening and shutting capacity of a relay contact. This will cause bad insulation, bad contact and bad connection.
- When cleaning, water or liquid including oil are prohibited, only clean with soft and dried cloth.
- Do not use in the place where there is inflammability gas, explosiveness gas, moisture, a direct ray of light, radiation, vibration and a shock.
- Please prevent from getting a dirt or leftover wire inside of this product.
- When connecting a sensor, please connect correctly after checking the polarity.

***Some of the setting, size etc. on this manual could be changed without an advance notice.***

## Warranty Information

This is the warranty below for customer who has a license or product from 『Dotech』 .

### Condition of warranty

The warranty period for 『Dotech』 products is a year so that it is provided support of the product during the warranty period.

『Dotech』 does not have a responsibility for problems of product under the circumstance below.

- . In the case of using without concerning the proper form mentioned on the manual.
- . In the case of problems caused from both external artificial and environmental factors.

Please contact 『Dotech』 in advance if there is any problem of product caused during the warranty period.

If the problem of product is informed from customer in the warranty period, it will be checked up in the customer area or sent to 『Dotech』 to check and conduct repair of exchange services directly.

If the product is over the warranty period or that is on the condition that it is not mentioned on manual, customer would be suggested to pay the cost of repair, exchange and delivery.

On the condition that suggestions for 'Warranty Condition Performance' below are not against the law, 『Dotech』 is not responsible for any compensation and guarantee caused by losses or damages by business interruption, loss, return.

### Warranty Condition Performance

Dotech is not responsible for any loss, damages, expenses insisted by customer, delegate, contractor except for customer claims caused by the condition of warranty above.

The condition of warranty mentioned above is the exclusive customer's right.

Dotech refuses any conditions of warranty for special purpose except for the condition of warranty.

Warranty Condition Performance does not apply any trouble caused by not following exact direction.

It is responsibility for customer to decide usage or product.

All the conditions of warranty are actually applied and Nobody has authority to modify or extend.

## **Revision Information**

Jul.7, 2009: Revision (F/W R090707)

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※ Please check the product to the model ordering before usage.

Model	Suffix Code	Description
CX9330A		UIC for Screw Air-Compressor
Type	- L	Basic Model
	- M	Multi-Function Model
	- V	VSD Model
Language	-	Korean
	- E	English
	- C	Chinese
	- A	Customer Language

※ Related Product Information.

Exclusive Temp. Sensor (DPR-TH02-S6D25L) : Delivery Temp., Oil Reclaimer Temp.

Pressure Sensor (DP500 Series) : Delivery Pressure, Oil Reclaimer Pressure

CX9330A Exclusive Transformer : AC220V and AC24V

※ Related Product Information.

CX9330A MODBUS RTU PROTOCOL MANUAL (PDF)

Pressure Sensor Data (PDF)

Temp. Sensor Data (PDF)

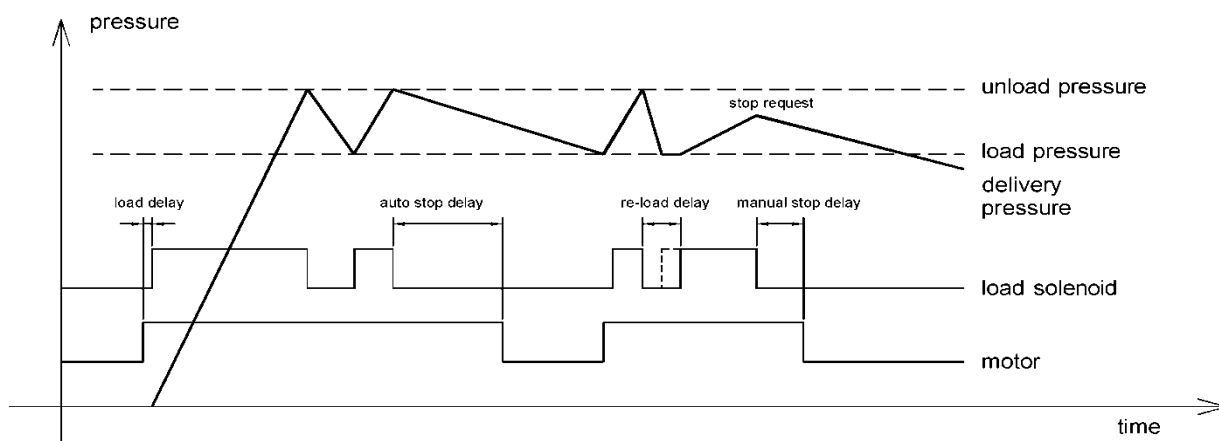
Wiring Diagram (PDF, DWG)

## 1. OUTLINE

UIC-CX9330 is based on Micro Processor and the most advanced equipment for controlling electricity conducting efficient operation of a screw air compressor. UIC-CX9330 is a system managing the compressor's operation intensively, saving energy through controlling of timing for capacity adjustment, preventing problems in advance with alarming system and informing the required preventative and maintenance schedule. In the other word, UIC-CX9330 conducts the best operation (control) according to the condition set up and operating circumstance.

Additionally, UIC-CX9330 has VSD and PID function together as an option, so it is possible to reduce more than maximum 30% of energy cost.

- High reliability RISC MICOM
- 128 x 64 graphic LCD which is available for Korean/English/Chinese/Japanese
- Max 50 events of running log storable (Non-volatile) – Easy preventative & maintenance and analysis for trouble
- Automatic calculation and notice function for preventative & maintenance, consumable parts exchange information and expected schedule
- Automation of economical operation by embedded weekly timer
- Various analogue outputs. (Inverter speed control, delivery pressure transmission)



Unload pressure : Pressure value under unload operation with closing intake valve on compressor

Load pressure : Pressure value under load operation with opening intake valve on compressor

Load delay : Delay time when compressor starts load operation from starting

Re-load delay : Minimum delay time when compressor start load operation from unload operation

Auto stop delay : Compressor is stopped in case of continuous operation at unload operation during auto stop delay time.

Manual stop delay : Compressor is stopped after unload operation during manual stop delay time.



## 1) Special Advantages

UIC-CX9330 is a stable electronic control unit for screw air compressor which can provide users with multi-language (Korean, English, Chinese and Japanese etc) display and running log for integral control and management of the equipments. It adopts the method of digital process by high efficiency RISC type microprocessor and occupies enough installation space and stability by unifying display module and control module. It provides convenience to let users know a status of operation at once through display.

### 1-1) Noise Solution

It is inevitable to figure for noise as an industrial controller. The digital input and output signal of UIC-CX9330A is isolated, so it can not be allowed to flow external signal into the main board inside. Also, CPU on main board mounts HARDWARE WATCHDOG TIMER which can automatically recover from CPU down occurred by noise per 32msec, and BROWN-OUT function embedded in CPU inside supervises control power in real-time.

### 1-2) RISC TYPE MICOM

.An assembler instruction in CPU can perform 7.3728Mbps, and logic for controlling written in CPU inside needs about 1[msec] based on 1 cycle. In this regard, sampling rate is about 10 times faster than the existing controllers, so it has less probability of malfunction and more precise control.

### 1-3) Black Box : A recorder of operation status

It is possible for UIC-CX9330 to store maximum until 50 events of running log, so it is easy for preventative & maintenance and trouble-shooting. Additionally, it is possible to verify the operation data at site when trip occurs, so it is helpful for users to know the reason of trouble and the status of equipment in real-time.

### 1-4) Display for operation status and/or maintenance information (trip computer)

UIC-CX9330 has the display function for operation status, delay time and ready time by counting reversely, so users can recognize the status of compressor at a glance. Also, it has the basic function to notify parts and oil checking and exchanging schedule by calculating it automatically according to the information of operation.

### 1-5) 128X64 Graphic LCD (Wide Temperature Range Type : -20 ~ +70°C)

Display part of UIC-CX9330 adopts 128 x 64 graphic LCD for user's easy operation and recognition.  
(Applicable for Korean, English, Chinese and Japanese etc.)

### 1-6) Minimization

It is possible to minimize compressor by occupying a small space due to unifying design of control part and display part.

### 1-7) Scalability

It provides users with RS485 port, MODBUS RTU standard protocol and MMI software and automatic interface.

## 2) Basic Specification

### 2-1) General Specification

Power Conditions	Input Power	AC24V 50/60Hz
	Power Consumption	Max. 20VA

### 2-2) CPU & LCD

CPU, LCD	C P U	ATmega 128, 16MHz
	L C D	128 X 64 pixel, LED Backlight

### 2-3) Digital Input & Output

Digital Input	Input Type	Opto-Isolation
	Number of Input	8 Points (1 Common)
	Signal Power	AC24V
Digital Output	Output Type	Relay Contact
	Number of Output	8 Points (3 Common)
	Relay Contact Type	250V, 3A

### 2-4) Analogue Input & Output

Analog Input	Temp. Sensor	NTC 2 Points
	4~20mAdc	2 Points (Internal Sensor Power 24V )
	Correction of Deviation	Software
Analog Output	Number of Channel	2 Channels
	Output Type	4~20mA
	Setup Type	Software

### 2-5) Communication Specification

Communication	Type	RS485(Half-Duplex) 1 Channel (Modbus RTU)
	Speed	4800, 9600, 19200, 38400 BPS (default 9600) Parity None, Data 8bit, Stop 1bit
	Distance	Max. 1.2Km
	Recommended Cable	BELDEN 9842 or 8761

### 2-6) Installation Circumstance

Field Conditions	Place	Indoor
	Operation Temp.	-10 ~ 60 °C
	Storage Temp.	-30 ~ 80 °C
	Operation Humidity	(No condensation) 5~95%

## 2. Input / Output Specification

### 1) Digital Input Signal

Pin	Name	Function	Active state
J4.1	IDC1	Input Common Terminal 1	
J4.2	ID1	Emergency Switch Signal	Fault (open)
J4.3	ID2	Oil-Filter High DP Alarm Signal	Alarm (open)
J4.4	ID3	Air-Filter High DP Alarm Signal	Alarm (closed)
J4.5	ID4	Oil Reclaimer DP Signal	Alarm (open)

Pin	Name	Function	Active state
J4.6	ID5	Remote Start/Stop Control Signal	Remote (closed)
J4.7	ID6	Remote Enable Signal	Remote (closed)
J4.8	ID7	Remote Load/Unload Control Signal	Remote (closed)
J4.9	ID8	Overload (PTC) Motor Signal	Fault (open)
-	-	-	-

**ID2 and ID4 can be available for Reverse Phase Signal.**

- **Active state : Fault (open)**

## 2) Digital Output Signal

Pin	Name	Function	Active state
J5.1	N1	Multi Function Port N1	
J5.2	N2	Multi Function Port N2	
J5.3	N3	Multi Function Port N3	
J5.4	N4	Multi Function Port N4	
J5.5	C1	Output Common Terminal 1	

Pin	Name	Function	Active state
J6.1	N5	Main Magnetic Contactor Signal	ON
J6.2	N6	Star Magnetic Contactor Signal	ON
J6.3	N7	Delta Magnetic Contactor Signal	ON
J6.4	C2	Output Common Terminal 2	
-	-	-	-

Pin	Name	Function	Active state
J7.1	N8	Load Solenoid Control Signal	ON
J7.2	C3	Output Common Terminal 3	
-	-	-	-

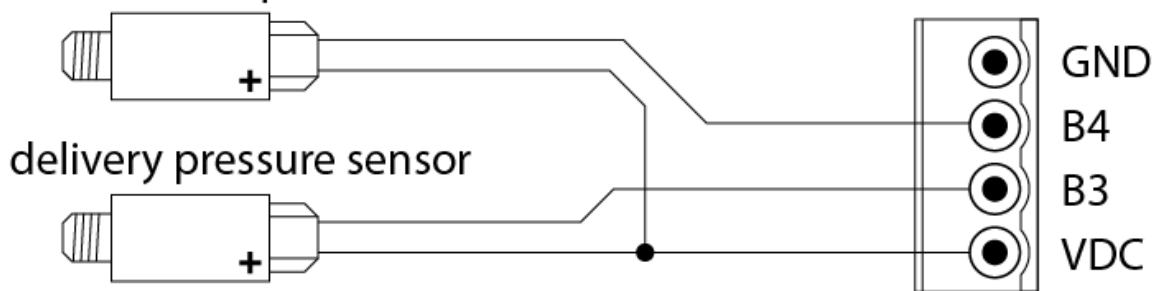
※ N1~N4 Functions are applicable from “M” model.

### 3) Analogue Input Signal

Pin	Name	Function	Type	Range
J3.1	+VDC	Sensor Power (+V Common)		
J3.2	B3	Delivery Air Press. Sensor Input	4 ~ 20mA	Settable
J3.3	B4	Oil Reclaimer Press. Sensor Input	4 ~ 20mA	Settable
J3.4	GND	0V Common (Earthing of Shield Wire)		

→ Oil reclaimer sensor input is applicable from “M” model.

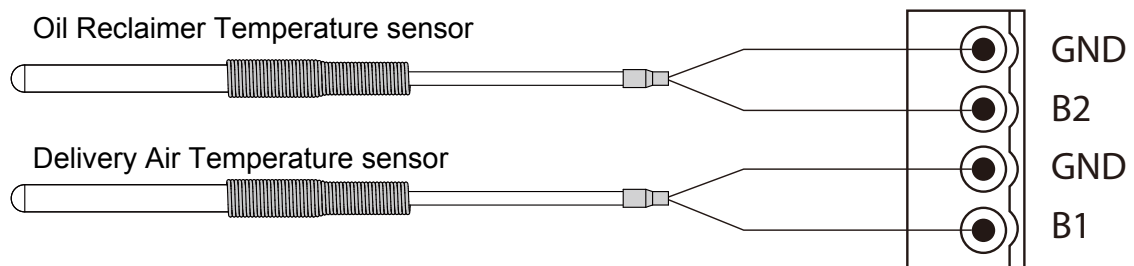
oil-reclaimer pressure sensor



#### -CX9330A Type Sensor

Pin	Name	Function	Type	Range
J2.1	B1	Delivery Air Temp. Sensor Input	NTC 10K	-30 ~ 200 °C
J2.2	GND	0V Common		
J2.3	B2	Oil Reclaimer Temp. Sensor Input	NTC 10K	-30 ~ 200 °C
J2.4	GND	0V Common		

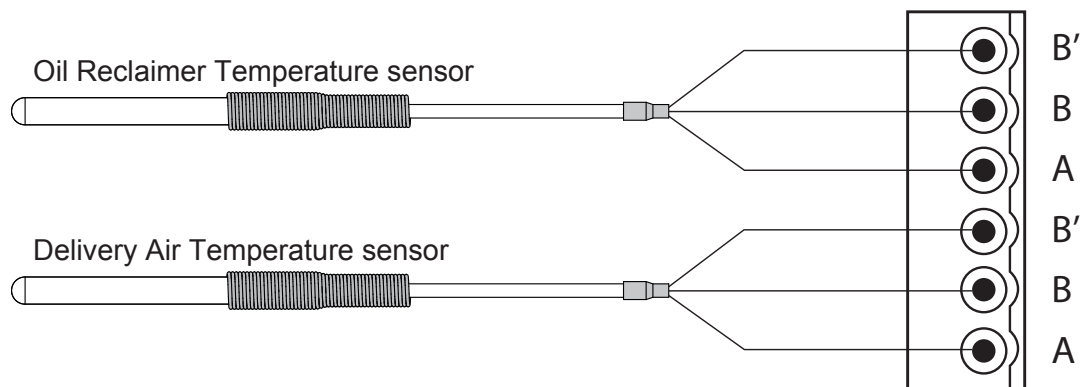
→ Oil reclaimer temp. sensor input is applicable from “M” model.



**-CX9330B Type Sensor**

Pin	Name	Function	Type	Range
J14.1	A	0V Common		
J14.2	B	Delivery Air Temp. Sensor Input 1	Pt100	-200 ~ 200 °C
J14.3	B'	Delivery Air Temp. Sensor Input 2	Pt100	-200 ~ 200 °C
J15.1	A	0V Common		
J15.2	B	Oil Reclaimer Temp. Sensor Input 1	Pt100	-200 ~ 200 °C
J15.3	B'	Oil Reclaimer Temp. Sensor Input 2	Pt100	-200 ~ 200 °C

➔ Oil reclaimer temp. sensor input is applicable from “M” model.

**4) Analogue Output Signal**

Pin	Name	Function	Type
J13.4	Y1	Inverter Speed Output Signal (in case of VSD control)	4 ~ 20mA (0 ~ 100%)
J13.3	YG1	Inverter Speed Control Output Common	
J13.2	Y2	Delivery Air Press. Transmission Signal	4 ~ 20mA (Range Setup)※
J13.1	YG2	Delivery Air Press. Transmission Signal Common	

➔ Analogue output signal is applicable from “V” model.

※ Delivery air press. transmission signal outputs retransmission signal (4~20mA) as the input range of [CONFIGURATION, Delivery press. min, Delivery press. max].

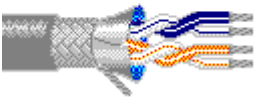
## 5) Communication Signal

### 5-1) SYSTEM BUS

Pin	Name	Function	Type
J10.2	TRX-	SYSTEM BUS TRX-	RS-485
J10.1	TRX+	SYSTEM BUS TRX+	

#### ※ Communication Signal (System Bus)

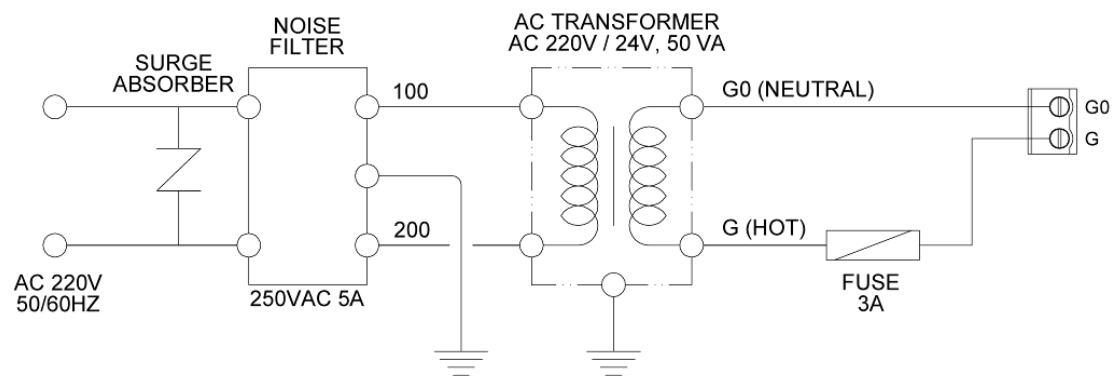
- ① Communication Type : RS-485
- ② Communication Speed : 4800, 9600, 19200, 384000 BPS, N, 8, 1, default 9600bps
- ③ Communication Protocol : MODBUS RTU MODE
- ④ Recommended Communication Cable : BELDEN 9842 or 8761

	<b>BELDEN 9842 Paired- Low Capacitance EIA RS-485</b>
(9842)	
	<ul style="list-style-type: none"> <li>● Number of Pairs: 2</li> <li>● Total Number of Conductors: 4</li> <li>● AWG: 24</li> <li>● Stranding: 7x32</li> <li>● Conductor Material: TC - Tinned Copper</li> <li>● Insulation Material: PE - Polyethylene</li> <li>● Outer Shield Material Trade Name: Beldfoil®</li> <li>● Outer Shield Material: Aluminum Foil-Polyester Tape/TC – Tinned Copper</li> <li>● Outer Jacket Material: PVC - Polyvinyl Chloride</li> <li>● Plenum (Y/N): N ●Plenum Number: 82842</li> <li>● Applications: Computer Cables, Low Capacitance EIA RS-485</li> </ul>
(8761)	

※ BELDEN 9842 standard cable is recommendable.

## 6) Control Power Input

Pin	Name	Function	Type
J11.1	G	AC24V(+)	
J11.2	G0	AC24V(-)	



(Power Input Wiring Diagram)



### 3. Constitution

#### 1) Operation and Display Part



##### 1-1) Basic Constitution

Display Part Specification : 128 X 64 Graphic LCD (LED Backlight)

Keyboard : Touch Keypad Switch (8EA)

##### 1-2) Operation Part

Start Switch : Start

Stop Switch : Stop

Reset : Reset when trip occurred

Start Lamp 1 : Ramp showing status of operation

Reset Lamp 2 : Ramp showing trip or warning

##### 1-3) Program Setup Part

Enter Switch : Selection of setup program or value

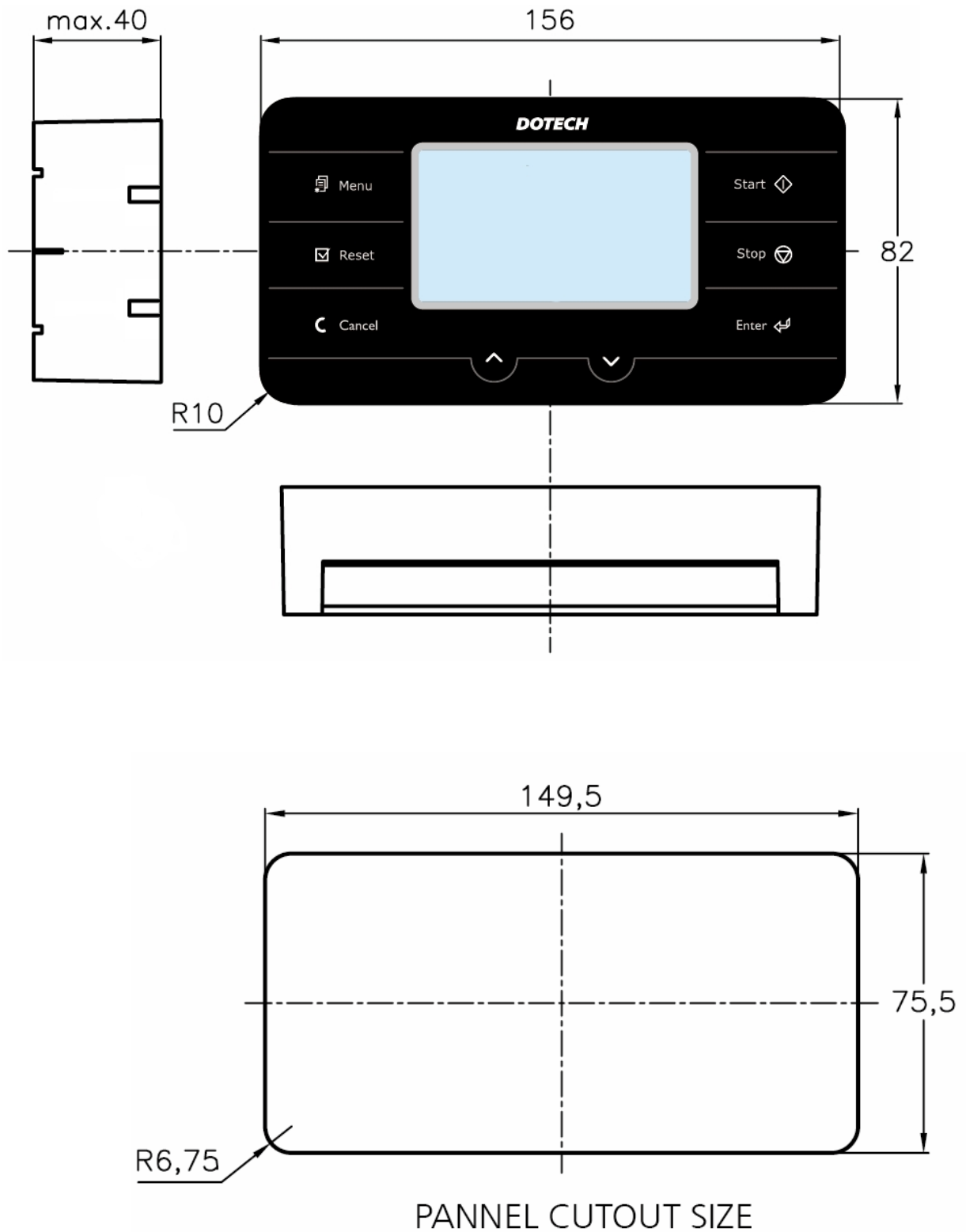
Downward Switch : Moving down to setup program or value

Upward Switch : Moving up to setup program or value

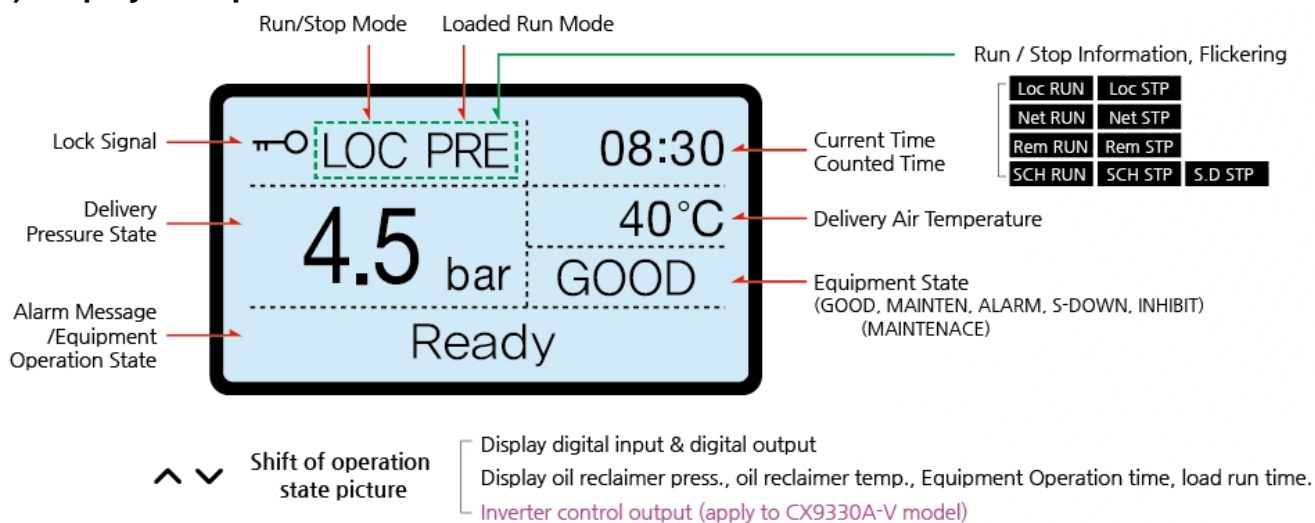
Menu Switch : Opening menu for setup

Cancel Switch : Returning to the previous menu or initial screen

## 2) Dimensions and Panel Cut-Out Information



### 3) Display for Operation Status





If you push "DOWN" it is displayed digital input & output status, oil reclaimer temp, oil reclaimer press. equipment operation time, load time and inverter output control respectively.

### 4) Operation Button Function

<b>Start / Stop</b>		<p>Select Start / Stop</p> <p>The equipment starts when pushing start button.</p> <p>The equipment stops when pushing stop button.</p>
<b>Reset</b>		<p>Reset when trip</p> <p>The trip reset automatically doesn't need to push reset button.</p>
<b>Menu</b>		It returns to setup and status menu when pushing menu button.
<b>Enter</b>		Choice and storage
<b>Up / Down</b>		Upward (Increase) and/or Downward (Decrease)
<b>Cancel</b>		Return to the previous menu or initial screen
<b>Brightness</b>		Push on the cancel in initial operation status screen, and then adjust screen using the Up / Down button.

## 5) Status Display Lamp

<b>START Lamp</b> <b>(Operation Status)</b>	 <b>Green</b>	ON / OFF according to operation status
<b>RESET Lamp</b> <b>(Alarm Status)</b>	 <b>Red</b>	ON / OFF according to alarm status

ON : LED is always on.

Low speed flickering : On for 0.5 sec./ Off for 0.5 sec.

High speed flickering : On for 0.1 sec./ Off for 0.1 sec.


Spot flickering : On for 0.1 sec. / Off for 4 sec.

OFF : LED is always off.

Status	Operation Status Lamp	Alarm Status Lamp
Initialization	OFF	Normal : OFF Trip : High Speed Flickering Alarm : Low Speed Flickering Maintenance : Spot Flickering Start Inhibit : Spot Flickering
Operation Inhibit	OFF	
Operation Ready	OFF	
Start Delay (Blowdown check)	Spot Flickering	
	Load Operation Request Status : High Speed Flickering	
Start Ready	Spot Flickering	
During Operation (Y/D transfer delay)	Spot Flickering	
	Load Operation Request Status : High Speed Flickering	
Load Operation Delay	Spot Flickering	
	Load Operation Request Status : High Speed Flickering	
Load Operation	ON	
Reload Delay	Spot Flickering	
	Load Operation Request Status : High Speed Flickering	
Auto-stop Delay	Spot Flickering	
Manual-stop Delay	Low Speed Flickering	
Shut-down	OFF	

## 6) Symbol Explanation

### 6-1) Equipment Status Display

LOC NET REM SCH	<b>Start / Stop Mode Status Display</b> LOC : Start / Stop using start / stop key on the equipment NET : Start / Stop from PC or remote device using protocol REM : Start / Stop remotely using digital input port on the equipment SCH : Start / Stop according to setup schedule of [Schedule] menu
PRE NET REM	<b>Load Operation Mode Display</b> PRE : Load / Unload operation by press. value of sensor on the equipment NET : Load / Unload operation from PC or remote device using protocol REM : Load / Unload operation remotely using digital input port on the equipment
LOC STP REM STP NET STP SCH STP S.D STP	<b>Stop Status Display</b> Display during equipment's stop LOC STP : Stop by stop button on the equipment REM STP : Stop by digital input NET STP : Stop by communication function SCH STP : Stop by setup time on [Schedule] menu S.D STP : Stop when trip occurred
LOC RUN REM RUN NET RUN SCH RUN	<b>Operation Status Display</b> Display during equipment's operation LOC RUN : Operate by start button on the equipment REM RUN : Operate by digital input NET RUN : Operate by communication function SCH RUN : Operate by setup time on [Schedule] menu
GOOD MAINTEN ALARM S-DOWN INHIBIT	<b>Equipment Status Display</b> GOOD : Normal status MAINTEN : Required maintenance ALARM : Alarm status S-DOWN : Sensing fault INHIBIT : Start inhibit
	<b>System Lock Signal</b>

**6-2) Digital Input Signal**

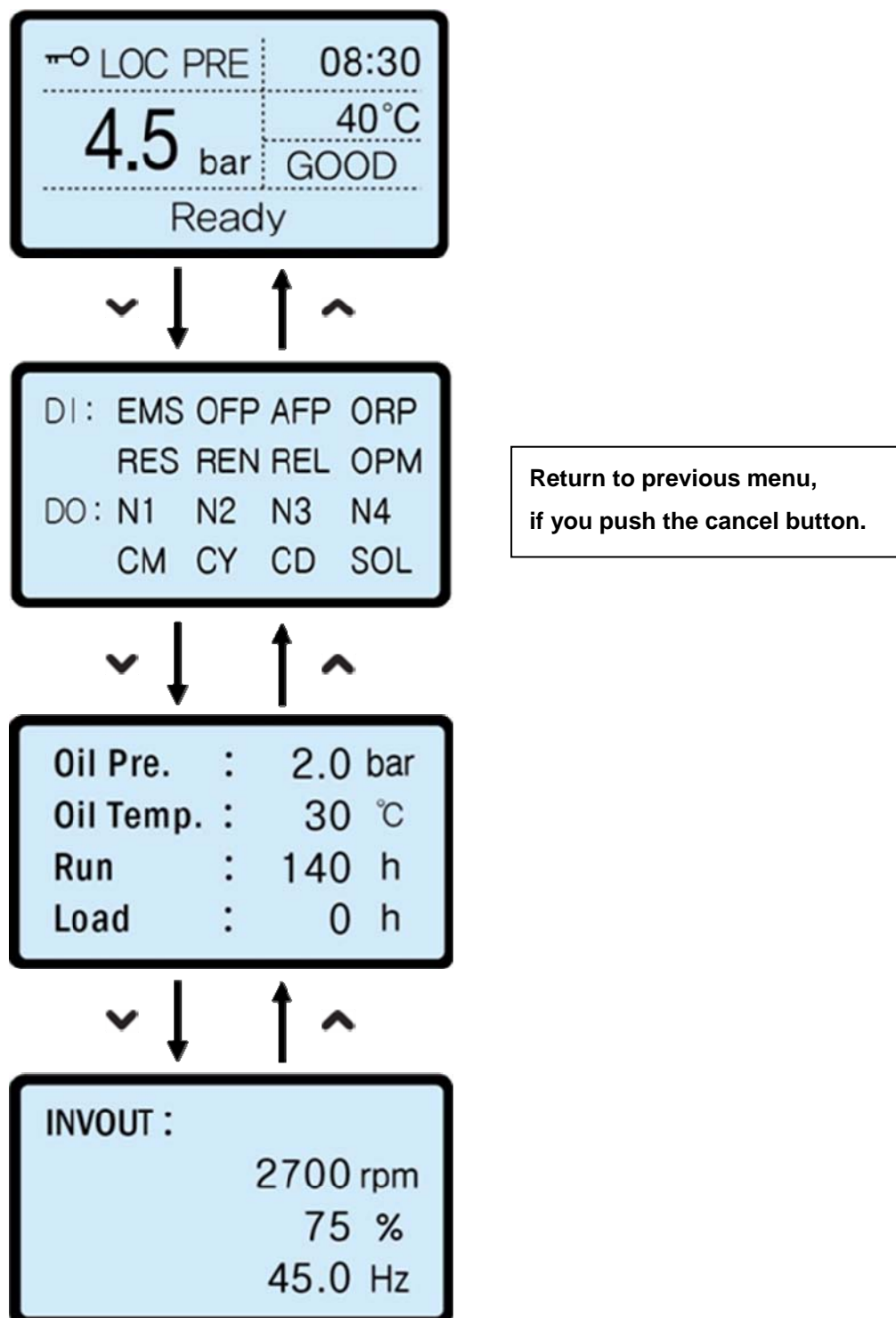
Symbol	Description	Symbol	Description
EMS	Emergency Switch Signal	OFF	Oil-Filter High DP Alarm Signal
AFP	Air-Filter High DP Alarm Signal	ORP	Oil Reclaimer DP Signal
RES	Remote Start/Stop Control Signal	REN	Remote Enable Signal
REL	Remote Load/Unload Control Signal	OPM	Overload (PTC) Motor Signal

**6-3) Digital Output Signal**

Symbol	Description	Symbol	Description
N1	Multi Function Port N1	N2	Multi Function Port N2
N3	Multi Function Port N3	N4	Multi Function Port N4
CM	Main Magnetic Contactor Signal	CY	Star Magnetic Contactor Signal
CD	Delta Magnetic Contactor Signal	SOL	Load Solenoid Control Signal

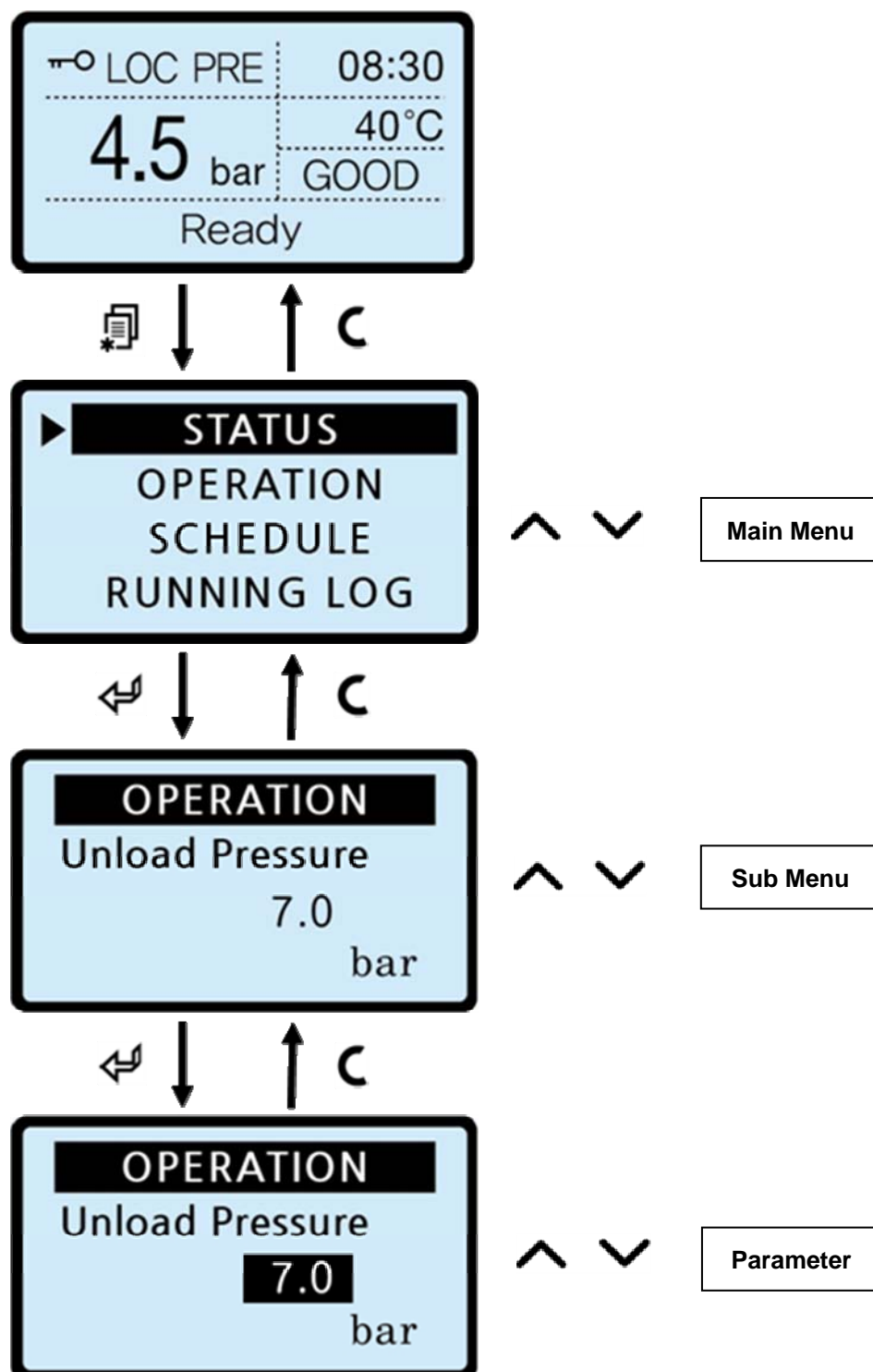
## 4. MENU CONSTITUTION

### 1) Main Screen Constitution Type



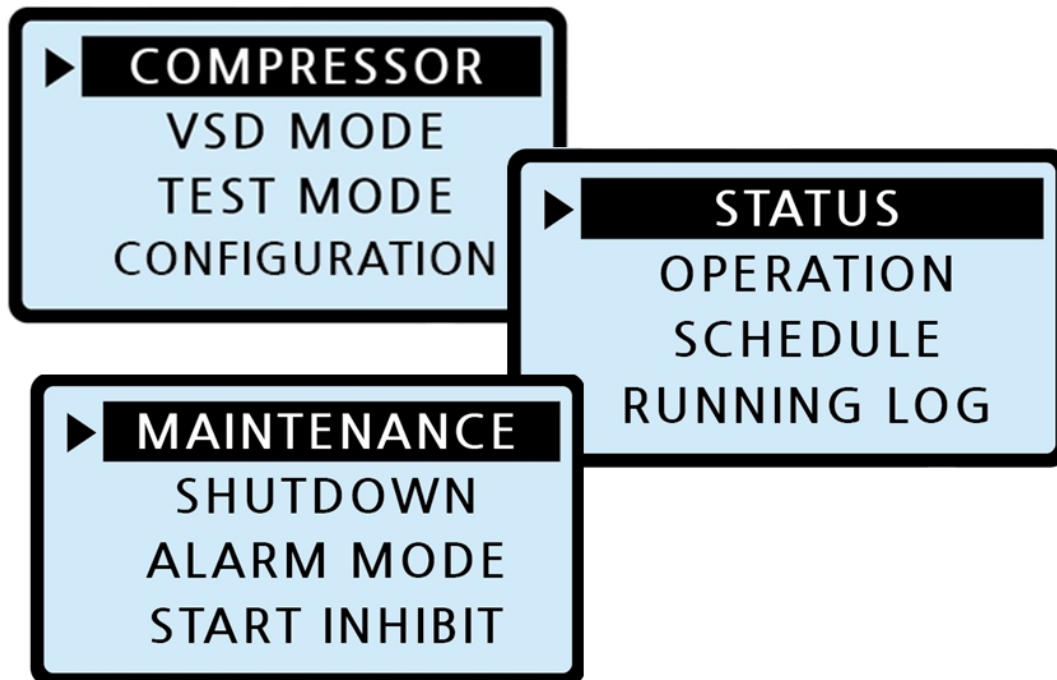
※ Inverter output menu is applicable from “V” model.

## 2) Menu Constitution Type



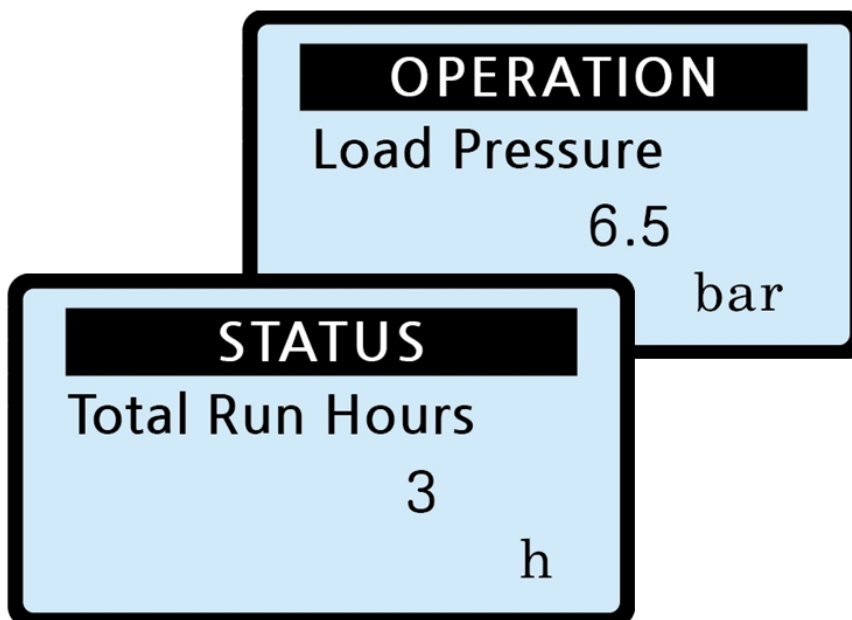


### 3) Main Menu Constitution (Example)



※ Showing menu might be slightly different from “V” model.

### 4) Sub Menu Constitution (Example)

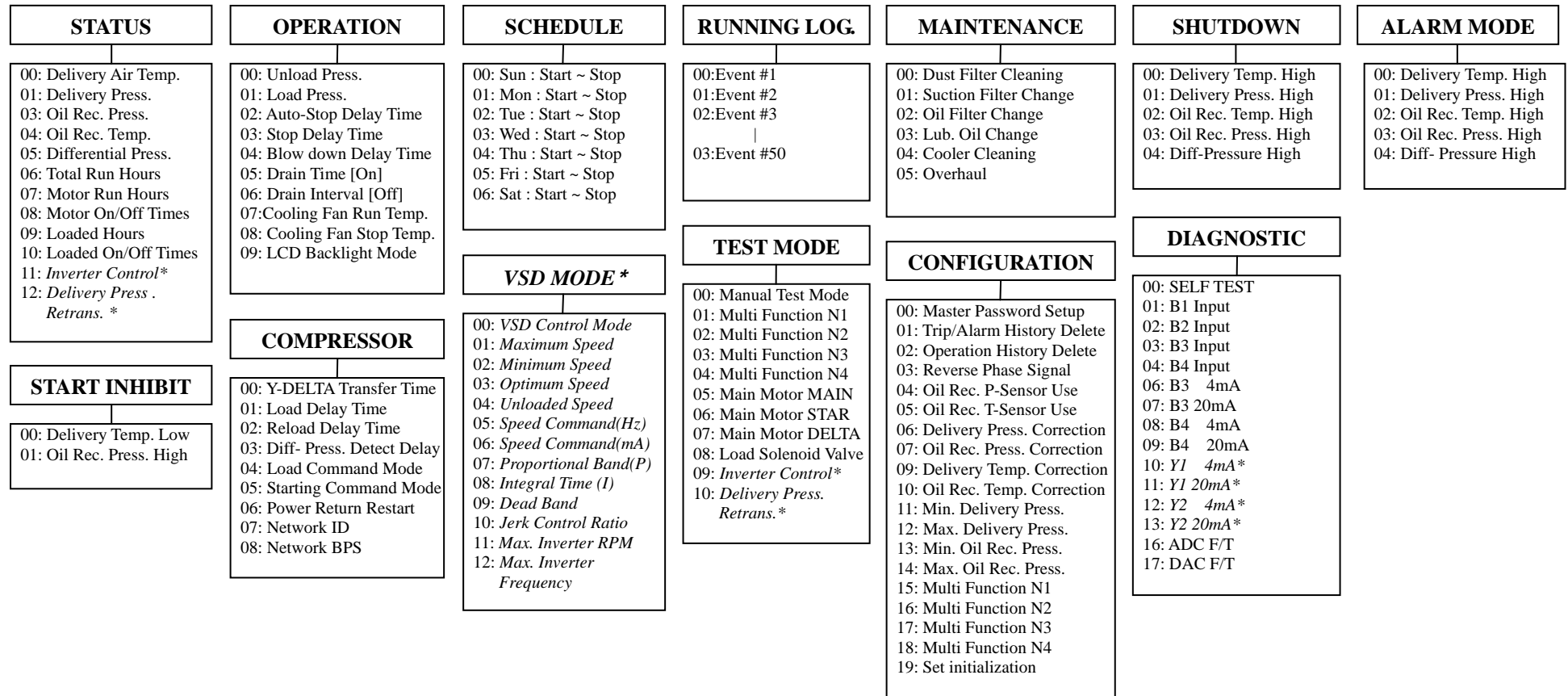


## 5) Menu Construction

(Based on 'M' model)

\* mark is applicable for ' V '

model only.

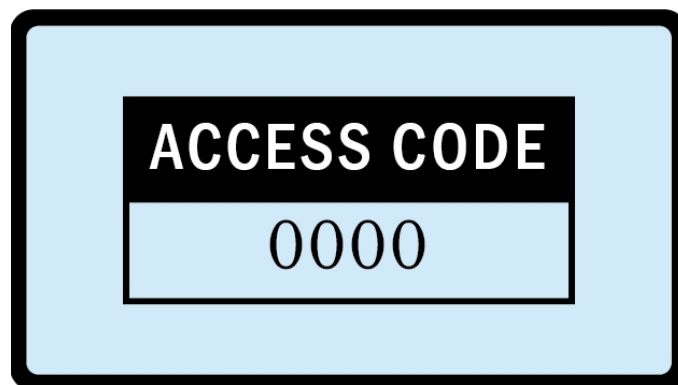


## 6) Menu Access Level

Access Level	USER (CODE = 0009)	SERVICE 1 (CODE = 0100)	SERVICE 2 (CODE = 0119)	SERVICE 3 (CODE = ****)
Accessible Menu	1. STATUS 2. OPERATION 3. RUNNING LOG 4. MAINTENANCE 5. SHUTDOWN 6. ALARM MODE 7. START INHIBIT	1. STATUS 2. OPERATION 3. RUNNING LOG 4. MAINTENANCE 5. SHUTDOWN 6. ALARM MODE 7. START INHIBIT 8. COMPRESSOR 9. VSD MODE* 10. TEST MODE 11. CONFIGURATION	1. STATUS 2. OPERATION 3. SCHEDULE 4. RUNNING LOG 5. MAINTENANCE 6. SHUTDOWN 7. ALARM MODE 8. START INHIBIT 9. COMPRESSOR 10. VSD MODE* 11. TEST MODE 12. CONFIGURATION 13. DIAGNOSTIC	1. STATUS 2. OPERATION 3. SCHEDULE 4. RUNNING LOG 5. MAINTENANCE 6. SHUTDOWN 7. ALARM MODE 8. START INHIBIT 9. COMPRESSOR 10. VSD MODE* 11. TEST MODE 12. CONFIGURATION 13. DIAGNOSTIC
Lasting Time	1 min.	10 min.	30 min.	1 hr.

When changing Access Level Mode, make locked by putting [Cancel] button for 3 seconds.

- ① If putting [Menu] on operating display, it shows access code input display below.  
(If putting [Menu] during supporting time, it does not ask Access Code.)
- ② After input Access Code by [Upward]/[Downward] key, put [Enter] and then, convert to Menu display.



<Display of Access Code Input>

- ③ If Access Level is under [Service] level 1, [configuration] parameter does not change.
- ④ When changing lock mode before lasting time, please push [Cancel] button for 3 seconds.

## 7) STATUS

Item	Description	Units	Step	Min	Max	Default
000	Delivery Air Temp.	°C	View Only			
001	Delivery Press.	Bar				
003	Oil Rec. Press.**	Bar				
004	Oil Rec. Temp.**	°C				
005	Differential Press.**	Bar				
006	Total Run Hours*	H	1	0	99999	
007	Motor Run Hours*	H	1	0	99999	
008	Motor On/Off Times*	T	1	0	99999	
009	Loaded Hours*	H	1	0	99999	
010	Loaded On/Off Times*	T	1	0	99999	
011	Inverter Control	mA	View Only			
012	Delivery Press. Retrains.	mA				

\* Times and Hours are automatically initialized and counted from "0" in case of over "99999".

\*Times and Hours are changeable over [Service 2]level.

\*\* Oil Reclaimer Pressure and Temperature are displayed only in case of setting [Use]of related item on Menu.

\*\*Differential Pressure = Oil Reclaimer Pressure – Delivery Pressure

## 8) OPERATION

Item	Description	Units	Step	Min	Max	Default	View	Access
100	Unload Press.	bar	0.1	0.0	70.0	7.0 bar	USER1	USER1
101	Load Press.	bar	0.1	0.0	65.0	6.5 bar	USER1	USER1
102	Auto-Stop Delay Time	sec	1	0	3600	300 sec	USER1	SVC1
103	Stop Delay Time	sec	1	0	3600	30 sec	USER1	SVC1
104	Blow down Delay Time	sec	1	0	600	10 sec	USER1	SVC1
105	Drain Time [On]**	sec	1	0	30	5 sec	USER1	SVC1
106	Drain Interval[OFF]**	sec	1	0	3600	60 sec	USER1	SVC1
107	Cooling Fan Run Temp.***	°C	1	0	200	60 °C	USER1	SVC1
108	Cooling Fan Stop Temp.***	°C	1	0	200	50 °C	USER1	SVC1

\*\*It is displayed only in case of setting [Use]of drain function on [CONFIGURATION : Multi Function].

\*\*\* It is displayed only in case of setting [Use]of cooling fan function on [CONFIGURATION: Multi Function].

### ① Unload Pressure :

- It cannot be set under +0.2bar of loaded pressure value.
- It cannot be set over -0.2bar of alarm pressure value.

### ② Load Pressure : It cannot be set over -0.2 bar of unload pressure value.

### ③ Temperature Sensing Capacity : Control(0.01 °C), Display(0.1 °C)

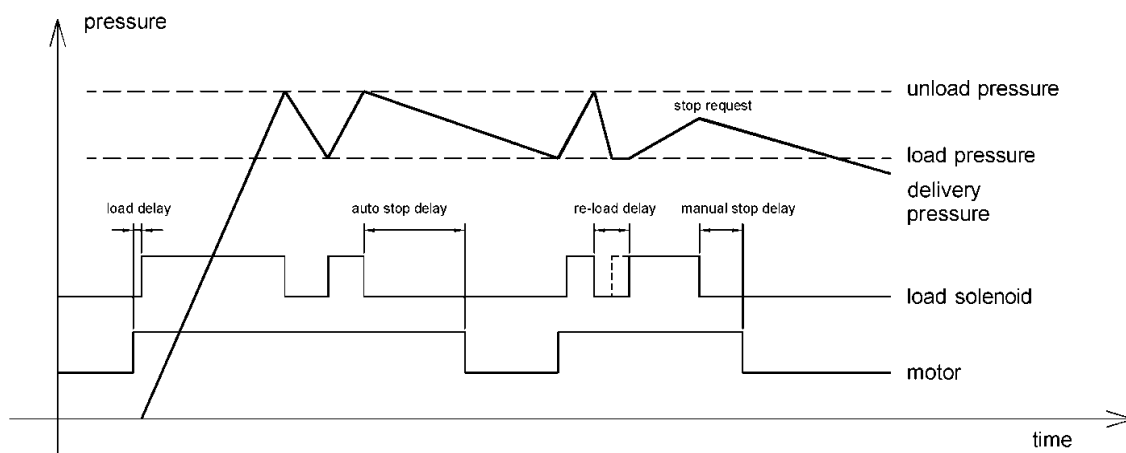
### ④ Pressure Sensing Capacity : Control(0.01bar), Display(0.1bar)

### ⑤ Cooling Fan Run Temp. : Temperature when cooling fan is under operation.

(It is recommended to be set more than 2 °C than cooling fan stop temperature)

### ⑥ Cooling Fan Stop Temp. : Temperature when cooling fan stops.

(It is recommended to be set less than 2 °C than cooling fan run temperature)



## 9) SCHEDULE

Item	Description	RUN ~ STOP
400	SUN	00 : 00 ~ 00 : 00
401	MON	08 : 30 ~ 18 : 30
402	TUE	08 : 30 ~ 18 : 30
403	WED	08 : 30 ~ 18 : 30
404	THU	08 : 30 ~ 18 : 30
405	FRI	08 : 30 ~ 18 : 30
406	SAT	08 : 30 ~ 12 : 30

※ It is applied and displayed only in case of setting of [Schedule Operation] on [COMPRSSOR] menu.

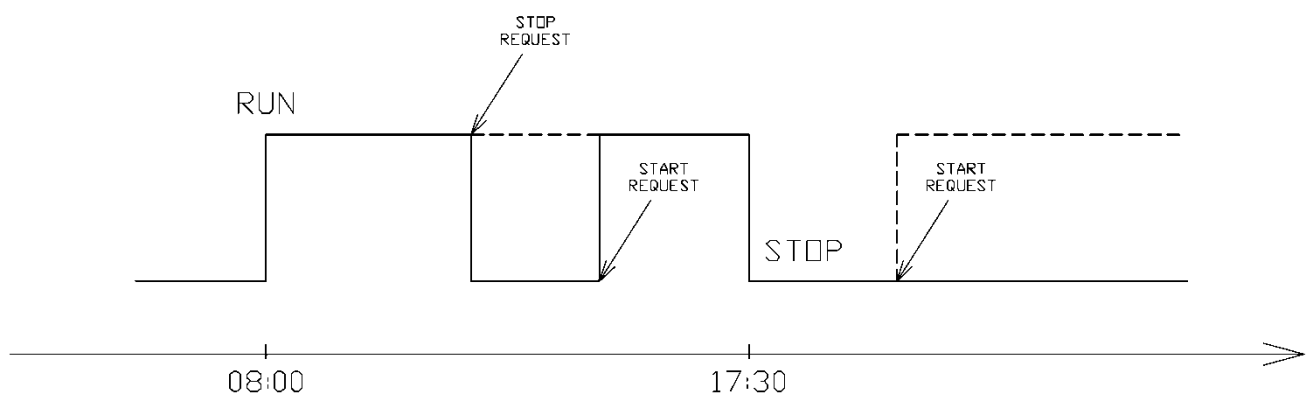
※ It is applicable from 'M' model.

- ① It is used in case of start and stop at indicated time.
- ② The equipment is automatically operated at run time and stopped at stop time.
- ③ In case of no operation on specific day, run time and stop time are set the same.
- ④ If run time is after stop time, the equipment shall not be operated.
- ⑤ It is possible to run & stop by pushing [Run] and [Stop] button during schedule operation.

(See the following picture)

- ⑥ The equipment shall not be operated after stop time, although pushing [Run] button.

(See the following picture).



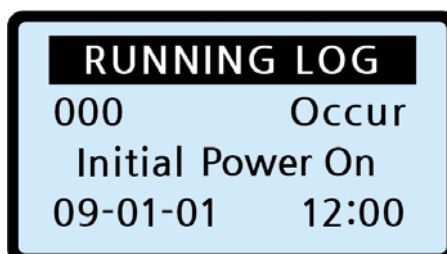
## 10) RUNNING LOG

Item	Date	Time	Occur / Reset	Event
1	Y Y / M M / D D	H H : M M	(Occur)	Event #1
2	Y Y / M M / D D	H H : M M	(Occur)	Event #2
3	Y Y / M M / D D	H H : M M	(Occur)	Event #3
4	Y Y / M M / D D	H H : M M	(Occur)	Event #4
50	Y Y / M M / D D	H H : M M	(Occur)	Event #50

※ It is impossible to modify and/or delete the contents of event at the option.

- ① When trip alarm occurs (resets), date and history of event are stored at non volatile memory.
- ② The maximum number of storable event is 50EA and it is deleted the earliest event and stored the latest one in case of over 50EA.
- ③ When event is occurred, the name of EVENT is recorded and display "occur" .Also, when event is reset, mark is showed.
- ④ When pushing [Enter] button, you can see operation status code, delivery pressure and delivery temperature when trip alarm occurs.

(Screen for Trip Alarm Status)

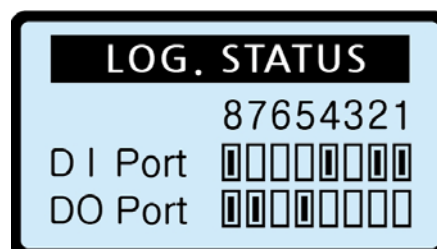
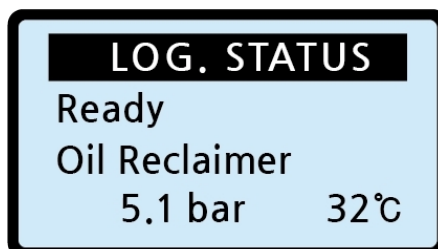
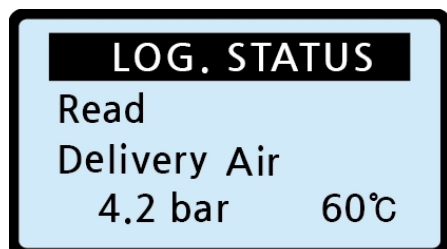


If pushing [ENTER] button, you can see the latest alarm history on screen for [Trip Alarm Status].

Delivery air status

Oil Reclaimer Status

Digital Input & Output Status



If pushing [ENTER] button at Trip Alarm Status, you can see the status of delivery air, oil reclaimer and digital input & output (In case of installation of sensor for oil reclaimer pressure or temperature)

**10-1) Trip Message**

Item	Description	Detect condition
1	System Fault	In case of unexpected change of the value of parameter
2	Emergency Stop	<div>Sensing</div> [Digital Signal Input : Emergency Stop] : ON <div>Reset</div> [Digital Signal Input : Emergency Stop] : OFF
3	Fan Motor O.L.	<div>Sensing</div> [Digital Signal Input : Fan Motor O.L] : ON <div>Reset</div> [Digital Signal Input : Fan Motor O.L] : OFF
4	Delivery Pressure High	<div>Sensing</div> Delivery Pressure $\geq$ [Shutdown: Delivery Pressure High] <div>Reset</div> Delivery Pressure < [Shutdown: Delivery Pressure High] - 0.5bar
5	Delivery Temp. High	<div>Sensing</div> Delivery Temp. $\geq$ [Shutdown: Delivery Temp. High] <div>Reset</div> Delivery Temp. < [Shutdown: Delivery Temp. High] - 5°C
6	Oil Rec. Pressure High	<div>Sensing</div> Oil Rec. Pressure $\geq$ [Shutdown: Oil Rec. Pressure High] <div>Reset</div> Oil Rec. Pressure < [Shutdown: Oil Rec. Pressure High] - 0.5bar
7	Oil Rec. Temp. High	<div>Sensing</div> Oil Rec. Temperature $\geq$ [Shutdown: Oil Rec. Temp. High] <div>Reset</div> Oil Rec. Temperature < [Shutdown: Oil Rec. Temp. High] - 5°C
8	Diff-Pressure High	<div>Sensing</div> (Oil Rec. Pressure-Delivery Pressure) $\geq$ [Alarm Mode: Diff-Press. High] & Delivery Air Temperature > 50°C <div>Reset</div> (Oil Rec. Pressure-Delivery Pressure.) < [Alarm Mode: Diff-Press. High] - 0.1bar
9	Brow down Time Over	Oil Rec. Pressure > [Start Inhibit : Oil Rec. Pressure High] in case of exceeding of [Operation : Blow down Delay Time] during brow down check sequence
10	Delivery P-Sensor	<div>Sensing</div> In case of occurrence of error on delivery Pressure sensor (disconnection / short) <div>Reset</div> In case of normal condition of delivery Pressure sensor
11	Delivery T-Sensor	<div>Sensing</div> In case of occurrence of error on delivery temp. sensor (disconnection / short) <div>Reset</div> In case of normal condition of delivery temp. sensor
12	Oil Rec. P-Sensor Fault	<div>Sensing</div> In case of occurrence of error on oil rec. pressure sensor (disconnection / short) <div>Reset</div> In case of normal condition of oil rec. pressure sensor
13	Oil Rec. T-Sensor Fault	<div>Sensing</div> In case of occurrence of error on oil rec. temperature sensor (disconnection / short) <div>Reset</div> In case of normal condition of oil rec. temperature sensor

※ Fault message occurred is reset by pushing [Reset] button after solving related reason.



**10-2) Alarm Message**

Item	Description	Detect condition	
1	Oil Filter High	<input type="button" value="Sensing"/>	[Digital Signal Input : Oil Filter High] : ON
		<input type="button" value="Reset"/>	[Digital Signal Input : Oil Filter High] : OFF
2	Air Filter High DP	<input type="button" value="Sensing"/>	[Digital Signal Input : Air Filter High DP] : ON
		<input type="button" value="Reset"/>	[Digital Signal Input : Air Filter High DP] : OFF
3	Oil Rec. Press. High	<input type="button" value="Sensing"/>	[Digital Signal Input : Oil Reclaimer High Press.] : ON
		<input type="button" value="Reset"/>	[Digital Signal Input : Oil Reclaimer High Press.] : OFF
4	Delivery Pressure High	<input type="button" value="Sensing"/>	Delivery Pressure $\geq$ [Alarm Mode : Delivery Pressure High]
		<input type="button" value="Reset"/>	Delivery Pressure $<$ [Alarm Mode : Delivery Pressure High]-0.5bar
5	Delivery Temp. High	<input type="button" value="Sensing"/>	Delivery Temp. $\geq$ [Alarm Mode : Delivery Temp. High]
		<input type="button" value="Reset"/>	Delivery Temp. $<$ [Alarm Mode : Delivery Temp. High]-5°C
6	Oil Rec. Press. High	<input type="button" value="Sensing"/>	Oil Rec. Pressure $\geq$ [Alarm Mode : Oil Rec. Pressure High]
		<input type="button" value="Reset"/>	Oil Rec. Pressure $<$ [Alarm Mode : Oil Rec. Pressure High]-0.5bar
7	Oil Rec. Temp. High	<input type="button" value="Sensing"/>	Oil Rec. Temperature $\geq$ [Alarm Mode : Oil Rec. Temperature High]
		<input type="button" value="Reset"/>	Oil Rec. Temperature $<$ [Alarm Mode : Oil Rec. Temperature High]-5°C
8	Diff-Pressure High	<input type="button" value="Sensing"/>	(Oil Rec. Pressure – Delivery Pressure) $\geq$ [Alarm Mode: Diff- Pressure High] & Delivery Air Temp. $>$ 50°C
		<input type="button" value="Reset"/>	(Oil Rec. Press. – Delivery Press.) $<$ [Alarm Mode: Diff- Pressure High]-0.1bar
10	RTC Stop Alarm	<input type="button" value="Sensing"/>	RTC is not working, (Sensible during scheduled operation)
		<input type="button" value="Reset"/>	RTC is in ordinary operation, (necessary to reset the time)

※ Occurred alarm message is automatically reset in case of reset condition.

**10-3) Start Inhibit Message**

Item	Description	Detect condition	
1	Delivery Temp. Low	<input type="button" value="Sensing"/>	Delivery Temp. $<$ [Start Inhibit-Delivery Temp. Low]
		<input type="button" value="Reset"/>	Delivery Temp. $>$ [Start Inhibit-Delivery Temp. Low]
2	Oil Rec. Press. High, Inhibit	<input type="button" value="Sensing"/>	Oil Rec. Pressure $>$ [Start Inhibit : Oil Rec. Pressure High]
		<input type="button" value="Reset"/>	Oil Rec. Pressure $<$ [Start Inhibit : Oil Rec. Pressure High]

※ The equipment doesn't operate when start inhibit alarm occurs, and it automatically starts when the alarm is reset..

**10-4) Running Log Message**

Item	Description	Detect condition
1	Initial Power On	Initial Power Input Time (It cannot be deleted.)
2	Power On	Power Input Time, (In case of system recovery by WATCH DOG timer)
3	Started	Operation Start Time
4	Stop	Operation Stop Time

※ It is recorded in Running Log.

**10-5) Maintenance Message**

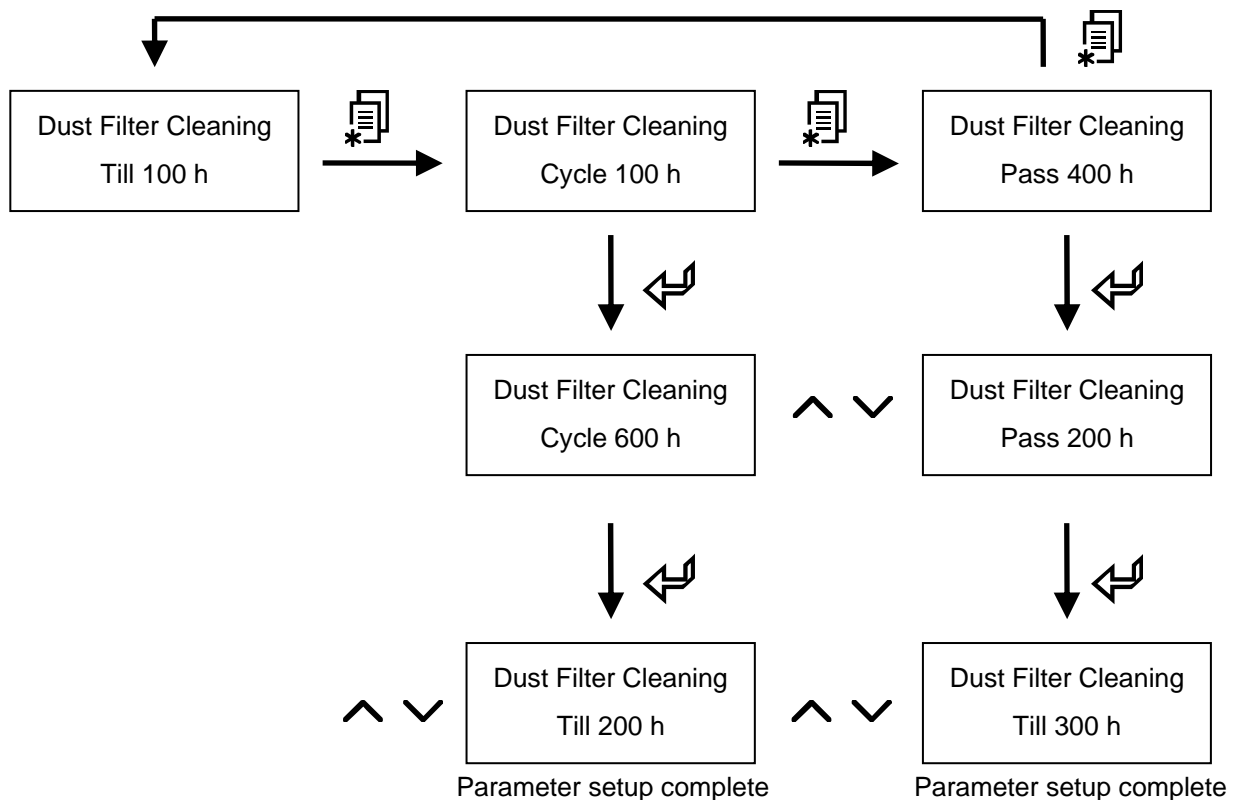
Item	Description	Detect condition
1	Dust Filter Cleaning	In case of exceeding dust filter cleaning cycle
2	Suction Filter Change	In case of exceeding suction filter change cycle
3	Oil Filter Cleaning	In case of exceeding oil filter change cycle
4	Lub. Oil Change	In case of exceeding lub. oil change cycle
5	Cooler Cleaning	In case of exceeding cooler cleaning cycle
6	Overhaul	In case of exceeding overhaul cycle

## 11) MAINTENANCE

Item	Description	Units	Step	Min	Max	Default	View	Access
400	Dust Filter Cleaning (Till, Cycle, Pass, Exceed)	h	1	0	32000	500 h	USER1	SVC1
401	Suction Filter Change (Till, Cycle, Pass, Exceed)	h	1	0	32000	4000 h	USER1	SVC1
402	Oil Filter Change (Till, Cycle, Pass, Exceed)	h	1	0	32000	8000 h	USER1	SVC1
403	Lub. Oil Change (Till, Cycle, Pass, Exceed)	h	1	0	32000	8000 h	USER1	SVC1
404	Cooler Cleaning (Till, Cycle, Pass, Exceed)	h	1	0	32000	8000 h	USER1	SVC1
405	Overhaul (Till, Cycle, Pass, Exceed)	h	1	0	32000	25000 h	USER1	SVC1

- In case of not using some items, please put cursor on the item and push [RESET] button at cycle mode.
- In case of resetting some items, please put cursor on the item and push [RESET] button at till-exceed, pass mode.
- You can see cycle, till-exceed, pass mode in order in case of pushing [Menu] button.

How to setup (Example : Dust Filter Cleaning)



## 12) SHUT DOWN

Item	Description	Units	Step	Min	Max	Default	View	Access
500	Delivery Temp. High	°C	1	0	130	120 °C	USER1	SVC1
501	Delivery Press. High	bar	0.1	0.0	100.0	8.0 bar	USER1	SVC1
502	Oil Rec. Temp. High*	°C	1	0	130	120 °C	USER1	SVC1
503	Oil Rec. Press. High**	bar	0.1	0.0	100.0	9.0 bar	USER1	SVC1
504	Diff-Press. High**	bar	0.1	0.0	5.0	1.0 bar	USER1	SVC1

\* It is only displayed in case of setting ON at [CONFIGURATION - Oil Rec. Temp. Sensor Use].

\*\*It is only displayed in case of setting ON at [CONFIGURATION - Oil Rec. Press. Sensor Use].

※ Trip press. value cannot be set over the maximum value of pressure sensor.

## 13) ALARM MODE

Item	Description	Units	Step	Min	Max	Default	View	Access
600	Delivery Temp. High	°C	1	0	130	110 °C	USER1	USER2
601	Delivery Press. High	bar	0.1	0.0	100.0	7.6 bar	USER1	USER2
602	Oil Rec. Temp. High*	°C	1	0	130	110 °C	USER1	USER2
603	Oil Rec. Press High**	bar	0.1	0.0	100.0	8.6 bar	USER1	USER2
604	Diff-Press. High**	bar	0.1	0.0	5.0	0.8 bar	USER1	USER2

\* It is only displayed in case of setting ON at [CONFIGURATION - Oil Rec. Temp. Sensor Use].

\*\*It is only displayed in case of setting ON at [CONFIGURATION - Oil Rec. Press. Sensor Use].

※ Alarm press. value cannot be set over -0.2bar of trip press. value or under +0.2bar of unload operation press.

※ Alarm temp. value cannot be set over -2°C of trip temp. value.

## 14) START INHIBIT

Item	Description	Units	Step	Min	Max	Default	View	Access
700	Delivery Temp. Low	°C	1	-20	20	1 °C	USER1	USER2
701	Oil Rec. Press. High**	bar	0.1	0.0	5.0	0.5 bar	USER1	USER2

\*\* It is only displayed in case of setting ON at [CONFIGURATION - Oil Rec. Press. Sensor Use].

※ Oil reclaimer press. high value cannot be set over the maximum value of oil reclaimer press. sensor.

## 15) COMPRESSOR

Item	Description	Units	Step	Min	Max	Default	View	Access
800	Y-DELTA Transfer Time	Sec	0.1	0.0	30.0	6.0 Sec	USER1	SVC1
801	Load Delay Time	Sec	1	0	300	10 Sec	USER1	SVC1
802	Reload Delay Time	Sec	1	0	300	10 Sec	USER1	SVC1
803	Diff-Press. Detect Delay	Sec	1	0	600	10 Sec	USER1	SVC1
804	Load Command Mode	-	Local / Network / Remote			Local	USER1	SVC1
805	Starting Command Mode	-	Local / Network / Remote / Schedule			Local	USER1	SVC1
806	Power Return Restart	-	ON/OFF			ON	USER1	SVC1
807	Network ID**	-	1	1	127	1	USER1	SVC1
808	Network BPS**	-	4800, 9600, 19200, 38400			9600	USER1	SVC1

\*\* It is only displayed in case of installing communication port option.

### 15-1) Starting Command Mode (Setup of control source for equipment run/stop)

- ① Local : Run/Stop using keypad on controller itself.
- ② Network : Run/Stop using system network.
- ③ Remote : When Digital Input Signal REN(ID6) is ON only , it is possible to operate RES(ID5), REL(ID7) /  
Edge Detection Method (It is possible to run or stop by network or keypad)
- ④ Schedule : Operation during the setup time on [Schedule] menu  
(It is possible to run or stop by network or keypad)

### 15-2) Load Command Mode (Setup of control source of equipment load run)

- ① Local : Using press. value from press. sensor.
- ② Network : Run/Stop using system network
- ③ Remote : [Load Run : Digital Input Signal (ID9) : ON], [Unload Run : Digital Input Signal : OFF]

### 15-3) Power Return Restart [Run/Stop Command in case of power return after mains failure]

- ① Power Return Function : ON
  - Mains failure during operation → Power return : Run
  - Mains failure during stop → Power return : Stop
- ② Power Return Function : OFF.
  - Mains failure during operation → Power return : Stop
  - Mains failure during stop → Power return : Stop

### 15-4) If Y-DELTA transfer time is set as '0.0'sec., the equipment operates direct start mode.

## 16) VSD MODE (Variable Speed Drive Control) – V Model

Item	Description	Units	Step	Min	Max	Default	View	Access
900	VSD Control Mode	-	OFF / FIX / VSD			OFF	USER1	SVC2
901	Maximum Speed	rpm	10	0	9990	3600	USER1	SVC2
902	Minimum Speed	rpm	10	0	9990	1500	USER1	SVC2
903	Optimum Speed	rpm	10	0	9990	2700	USER1	SVC2
904	Unloaded Speed	rpm	10	0	9990	1800	USER1	SVC2
905	Speed Command(Hz)	Hz	View only				USER1	LOCK
906	Speed Command(mA)	mA	View only				USER1	LOCK
907	Proportional Band (P)	%	0.1	0.0	99.9	10.0	USER1	SVC2
908	Integral Time (I)	sec	1	0	3600	10	USER1	SVC2
909	Dead Band (DBand)	%	0.1	0.0	20.0	0.7	USER1	SVC2
910	Jerk Control Ratio	%	0.1	0.1	99.9	10.0	USER1	SVC2
911	Max. Inverter RPM	rpm	10	0	9990	3600	USER1	SVC2
912	Max. Inverter Frequency	Hz	5	0	120	60	USER1	SVC2

**VSD controls the speed of main motor according to the change of delivery pressure, so it can maintain stable required pressure.**

**Control algorism uses PI control out of PID control.**

① VSD Control Mode :

OFF : VSD not used.

FIX : Control in optimum load operation speed

VSD : Various speed control according to delivery pressure. [Target press. : (Operation : Load Pressure)]

② Maximum Speed : Put in the speed which limits maximum speed of motor.

③ Minimum Speed : Put in the speed which limits minimum speed of motor (Put in 20% of speed range)

④ Optimum Speed : Put in optimum load speed of motor (Put in 70% of speed range)

⑤ Unloaded Speed : Speed of unload operation, In case of error in deliver press. in [Operation:Unload Pressure]

⑥ Proportional Band (P) : Put in 'P' value out of PID invariable number.

⑦ Integral Time (I) : Put in 'I' value out of PID invariable number.

⑧ Dead Band (D.Band) : Dull control of speed change if the difference between delivery press. and target press. is in dead band.

⑨ Jerk Control Ratio : Limit value of motor speed variation. (Jerk Control)

⑩ Max. Inverter RPM : Put in motor speed from inverter when 100% operation.

⑪ Max. Inverter Frequency : Put in maximum operation frequency setting in inverter.

## 17) TEST MODE

Item	Description	Units	Step	Min	Max	Default	View	Access
1000	Manual Test Mode***	-	ON / OFF			OFF	USER1	SVC1
1001	Multi Function N1	-	ON / OFF			OFF	USER1	SVC1
1002	Multi Function N2	-	ON / OFF			OFF	USER1	SVC1
1003	Multi Function N3	-	ON / OFF			OFF	USER1	SVC1
1004	Multi Function N4	-	ON / OFF			OFF	USER1	SVC1
1005	Main Motor Main	-	ON / OFF			OFF	USER1	SVC1
1006	Main Motor Star	-	ON / OFF			OFF	USER1	SVC1
1007	Main Motor Delta	-	ON / OFF			OFF	USER1	SVC1
1008	Load Solenoid Valve	-	ON / OFF			OFF	USER1	SVC1
1009	Inverter Control*	mA	0.1	4.0	20.0	4.0mA	USER1	SVC1
1010	Delivery Press. Retrains*	mA	0.1	4.0	20.0	4.0mA	USER1	SVC1

\*\*\* Manual test is available when [Manual Test Mode] is ON only.

\* It is only displayed in case of installing analogue output option.

- ① Manual Test is available when the equipment is stopped only..
- ② Main Motor STAR (Star Magnet) and Main Motor DELTA(Delta Magnet) cannot be turned on at the same time.
- ③ Manual Test Mode is automatically released after 2 minutes from the final performance of manual test.

## 18) CONFIGURATION

Item	Description	Units	Step	Min	Max	Default	View	Access
1100	Master Password Setup	-	-			-	LOCK	LOCK
1101	Trip/Alarm History Delete	-	NO / YES			NO	USER1	SVC2
1102	Operation History Delete	-	NO / YES			NO	USER1	SVC2
1103	Reverse Phase Signal		OFF/ID2/ID4			OFF	USER1	SVC2
1104	Oil Rec. Press. Sensor use	-	ON / OFF			ON	USER1	SVC2
1105	Oil Rec. Temp. Sensor use	-	ON / OFF			ON	USER1	SVC2
1106	Delivery Press. Correction	bar	0.1	-9.9	+9.9	0.0 bar	USER1	SVC1
1107	Oil Rec. Press. Correction	bar	0.1	-9.9	+9.9	0.0 bar	USER1	SVC1
1109	Delivery Temp. Correction	°C	0.1	-9.9	+9.9	0.0 °C	USER1	SVC1
1110	Oil Rec. Temp. Correction	°C	0.1	-9.9	+9.9	0.0 °C	USER1	SVC1
1111	Min. Delivery Press.	bar	0	-10	100	0 bar	USER1	SVC2
1112	Max. Delivery Press.	bar	0	-10	100	16 bar	USER1	SVC2
1113	Min. Oil Rec. Press.	bar	0	-10	100	0 bar	USER1	SVC2
1114	Max. Oil Rec. Press.	bar	0	-10	100	16 bar	USER1	SVC2
1115	Multi Function N1	-	1 choice out of 12 functions			OFF	USER1	SVC1
1116	Multi Function N2	-	1 choice out of 12 functions			OFF	USER1	SVC1
1117	Multi Function N3	-	1 choice out of 12 functions			OFF	USER1	SVC1
1118	Multi Function N4	-	1 choice out of 12 functions			OFF	USER1	SVC1
1119	Setup initialization		1	0	9999	0	SVC2	SVC2

※ Function list of multi function output port is supported over 'M' model.

### 18-1) Reverse Phase Signal Input Port

Use ID2 input for Reverse Phase Signal Input Port.

- ① OFF :Not use for Reverse Phase Signal Input Port.(REV)
- ② ID2 : Use ID2 input signal for Reverse Phase Signal Input Port.(REV)
- ③ ID4 : Use ID4 input signal for Reverse Phase Signal Input Port.(REV)



**18-2) Multi Function Output**

Item	Function	Description
1	OFF	Not Use
2	Alarm	Output ON : Alarm
3	Trip	Output ON : Trip
4	AL+Trip	Output ON : Trip, Alarm, Maintenance, Start Inhibit
5	Service	Output ON : Maintenance
6	Ready	Output ON : Ready
7	Start	Output ON : Start, Output OFF : Stop
8	Motor Run	Output ON : Motor Run
9	Loaded	Output ON : Load Operation
10	Cooling	ON : [Operation: Cooling Fan Run Temp.] $\geq$ Delivery Air Temp. OFF : [Start Inhibit: Cooling Fan Stop Temp.] $\leq$ Delivery Air Temp.
11	Heater	ON : [Start Inhibit: Delivery Temp. Low] + 5°C < Delivery Air Temp. OFF : [Start Inhibit: Delivery Temp. Low] + 10°C > Delivery Air Temp.
12	Drain	ON during [Operation: Drain Interval] as [Operation: Drain Time] while motor runs
13	Remote	Output On : Remote

## 19) DIAGNOSTIC

※ It is our initial setup value when shipped out, so you are kindly required to understand it first and then change the value.

Item	Description	Units	Step	Min	Max	Default	View	Access
900	Self Test	-	NO / YES / BUN			NO	SVC2	SVC3
901	B1 Input	-	Only View			999	SVC2	-
902	B2 Input	-				284	SVC2	-
903	B3 Input	-				999	SVC2	-
904	B4 Input	-				284	SVC2	-
906	B3 4mA	-	1	0	1023	284	SVC2	SVC3
907	B3 20mA	-				999	SVC2	SVC3
908	B4 4mA	-				284	SVC2	SVC3
909	B4 20mA	-				999	SVC2	SVC3
910	Y1 4mA	-	1	0	9999	626	SVC2	SVC3
911	Y1 20mA	-				3270	SVC2	SVC3
912	Y2 4mA	-				626	SVC2	SVC3
913	Y2 20mA	-				3270	SVC2	SVC3
916	ADC F/T	-	1	1	256	4	SVC2	SVC3
917	DAC F/T	-	1	1	256	4	SVC2	SVC3

This product has automatic self test function and digital calibration function for digital input / output.

This menu is for improving accuracy of hardware and software of our product, when we ship it out.

Therefore if you want to change any contents of this menu, please contact us.

- ① Self Test: ON when shipping out
- ② Trip/Alarm History Delete : Use when deleting trip/alarm history
- ③ Operation History Delete : Use when deleting operation history
- ④ Bn 4mA : Analogue Input (4mA)
- ⑤ Bn 20mA : Analogue Input (20mA)
- ⑥ Yn 4mA: A variable number for changing of quantization of analogue output signal (4mA)
- ⑦ Yn 20mA: A variable number for changing of quantization of analogue output signal (20mA)
- ⑧ ADC F/T : Input filter for analogue input data (Temperature, Pressure)

- ⑨ DAC F/T : Output filter for analogue output data (Inverter speed control signal, Transmission Signal)

## 20) SYSTEM DATE / TIME

Date / Time is used for a point of reference to record system information such as trip/alarm history, operation history and scheduled operation. It is inevitable when any troubles in equipment occur, so please set it up exactly.

- ① When you push [MENU] button once at operation screen, access code input window is displayed.
- ② When you push [MENU] button once again, the following window for setting date/time appears.
- ③ Please set up date / time by using [ENTER] and [Upward] / [Downward] button, and then return to operation screen by pushing [CANCEL] button.
- ④ A day of the week is automatically set.
- ⑤ If ":" between hour and minute is not flickered per a second, please set it up once again.

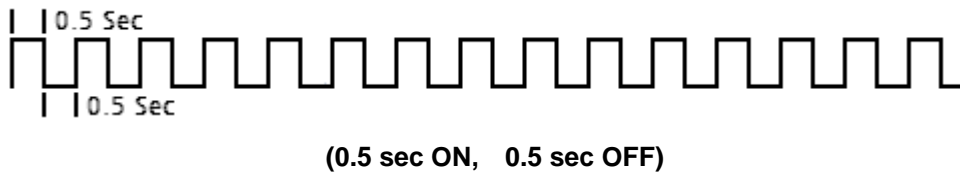


<DATA / TIME SETUP WINDOW>

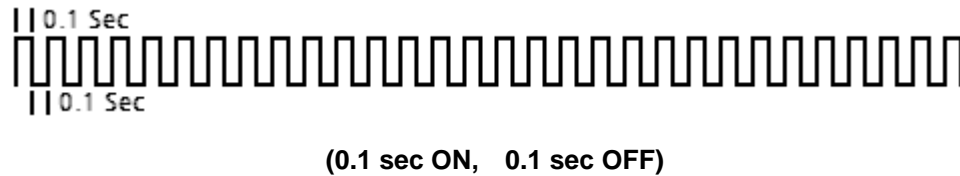
## 21) LED STATUS DISPLAY (Rear- LED1)

You(User) can see LED1 without removing the rear enclosure case, and it is located on the PCB between J11 and J5. This LED1 provides the information about equipment status for user.

### 21-1) Flickering Of Normal State



### 21-2) Flickering Of Manual Test Mode



### 21-3) Factory Test mode (ON)



### 21-4) Factory Test Mode (BUN)



## 5. HOW TO INSTALL

### 1) Installed Place

Please install this controller in the following place in the same way with other general industrial electronic devices.

- ⊙ No variable temperature change & normal temperature
- ⊙ No corrosive gas
- ⊙ Low or high humidity
- ⊙ Little mechanical vibration
- ⊙ Little dust and smoke
- ⊙ Little effect of electric noise
- ⊙ No effect of strong magnetic field

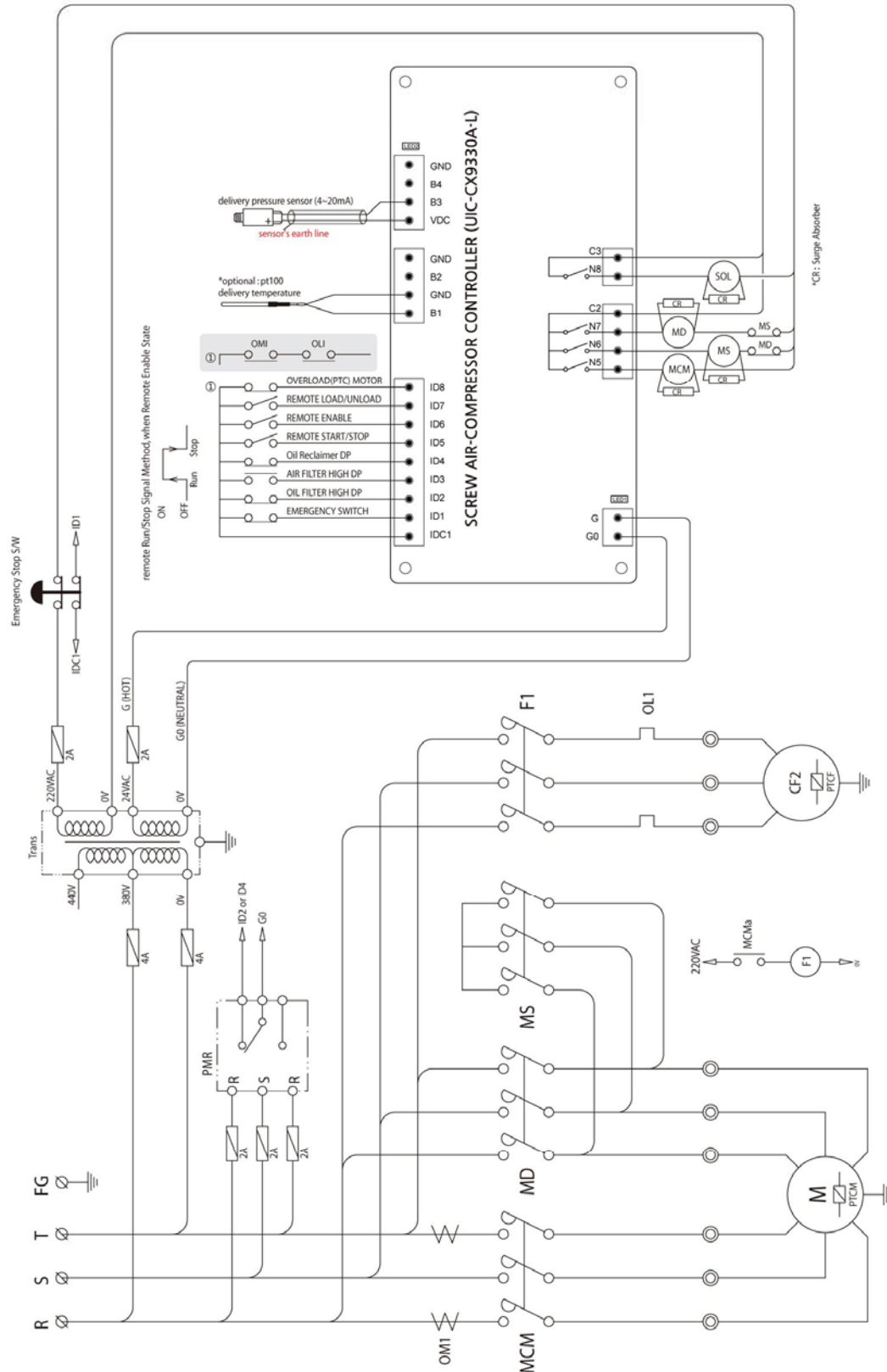
### 2) Installed Method

- ⊙ Installed angle should be within 15 degrees of slope from horizontal location.
- ⊙ Please use more than 2mm thickness of steel plate for sticking panel.
- ⊙ Do not set up by force.
- ⊙ Please fasten 4 directions of display with enclosed screws.

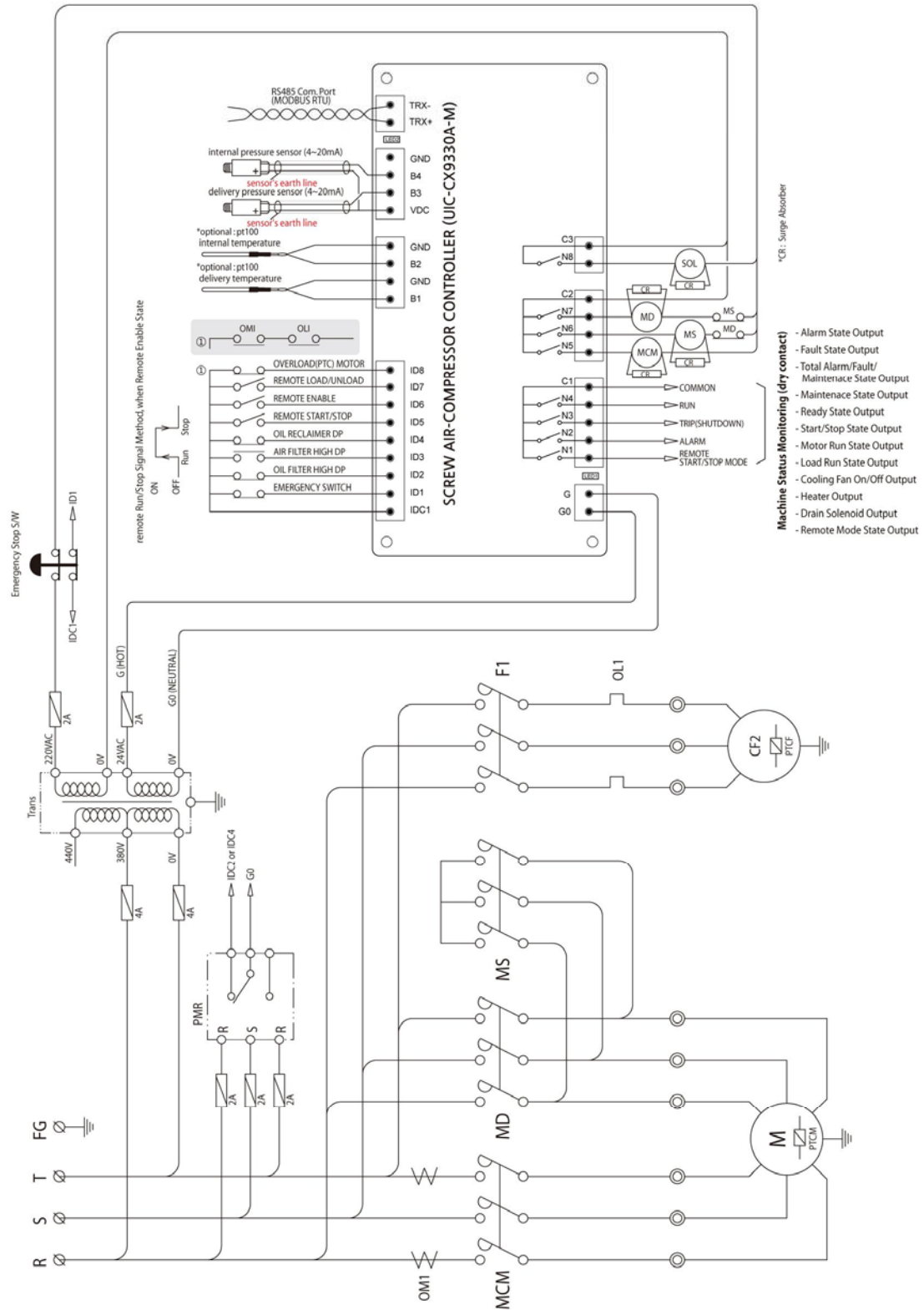
### 3) Caution for Wiring

- ⊙ Please use shield cable between display part and main board in order to avoid noise.
- ⊙ Please keep input/output signal line away more than 30cm from power line and do not put at the same lines together.
- ⊙ Please install fuse additionally in order to protect controller from overvoltage..
- ⊙ Please wire surge absorber at magnet control coil in parallel in order to improve stability of controller.
- ⊙ Please install noise filter in order to improve the stability of controller.
- ⊙ Please use AWG No. 12~28 and fasten terminal screw by 0.3~0.4N•m torque when wiring.
- ⊙ Please use terminal connected with controller as pin hole terminal (CE007508 standard).

## 6. Wiring Diagram – CX9330A-L



## 7. Wiring Diagram – CX9330A-M



## 8. Wiring Diagram – CX9330A-V

